General Notes.

MINERALOGY.[1]

Identity of Rhabdite and Schreibersite.—The fine needles of phosphide of iron and nickel which in many meteorites accompany or take the place of the larger crystals or lenses of schreibersite, go under the name of rhabdite. Whether rhabdite is identical with schreibersite has long been in question. After carefully separating the material from the matrix, Cohen[2] has made analyses of rhabdite from five localities with the following results:

	Fe	Ni	Co	P
1. Seeläsgen, Prussia	49.76	36.17	0.46	13.61
2. Lime Creek, Ala.	51.10	32.99	0.42	15.49
3. Bolson de Mapimi, Mexico.	52.54	31.71	0.72	15.03
4. Sancha Estate, Cape Colony.	55.30	28.78	0.60	15.32
5. Hex River Mts., Cape Colony.				
a) needles	56.71	27.36	0.47	15.46
b) plates	62.45	21.71	0.35	15.49

These analyses show the formula of rhabdite to be $(Fe\ Ni\ Co)_3\ P$ or identical with that of schreibersite. Kamazite is found to be like taenite, an alloy with narrow limits for the variation of cobalt and nickel. Wülfing[3] has published a handy list of the meteorites in the world's collections.

English's New Catalogue of Minerals.[4]—The average trade catalogue of minerals is unsatisfactory because it fails to supply desired information concerning crystallography, occurrence, locality, etc. The recent catalogues of English and Company have shown a great advance over this type of catalogue, in, that beside the needed information concerning the locality, there has been added, in the case of recently described occurrences, a reference to the original description. Another valuable feature is the insertion of miniature cuts indicating the devel-

[1] Edited by Dr. Wm. H. Hobbs, University of Wisconsin, Madison, Wis.

[2] Ann. k. k. naturhist. Hofmuseums, ix; Heft 1, pp. 97–118, 1894.

[3] Jahresheft d. Verein f. vaterl. Naturkunde i. Wurtemberg, Jahrg. 1894, pp. 1–21.

[4] Catalogue of Minerals, Geo. L. English & Co., 16th ed., pp. 124. New York, June, 1894.

opment of crystallized specimens. This mode of illustration can hardly be carried too far to suit the taste of the professional mineralogist, but as it involves expense and time in the preparation of the catalogue, we would suggest that the particular combination exhibited by a crystal might nearly as well be indicated by the use of form symbols. The sixteenth edition of English's catalogue contains a classified list of mineral species arranged like that in Dana's "System" (6th Ed.), in which is given after each species the symmetry, hardness, specific gravity, and chemical composition. A supplement to the list includes the species mentioned in Dana's supplement as well as minerals of more recent description. The book is quite free from errors and contains an alphabetical index. Only about one-third of the book is devoted to advertising.

Leadhillite from near Granby, Missouri.—The rare mineral leadhillite occurs near Granby, Mo., in part in good crystals associated with massive cerussite. As studied by Pirsson and Wells[5] these crystals are either prisms or plates having dimensions of one or more centimeters. The symmetry is monoclinic and pseudo-hexagonal, and the combinations are simple, usually (001), (110) and (100), more rarely also (201), ($\bar{4}$14) and ($\bar{4}$18). Twinning parallel to the unit prism is common and the basal cleavage is perfect. The physical and optical properties agree in the main with those of the already known leadhillite. The etched figures on the base (dilute nitric acid) closely resemble those of the micas. An analysis gave the following results:

SO_3	CO_2	PbO	H_2O	Total
7.33	8.14	82.44	1.68	99.59

The formula for the mineral is therefore Pb SO_4. 2Pb CO_3. Pb $(OH)_2$, which does not agree with any of the other published analyses of the mineral but is the formula which has been suggested by Groth.

Two New Instruments for Mineral Study.—Tutton[6] has published a brief preliminary notice of two important instruments which he has devised, full descriptions of which will be printed in the Philosophical Transactions. One of these is a delicate instrument for grinding very accurately in any desired direction, prisms and sections of minerals for optical study. In half an hour the two surfaces of the section may be prepared. The method is specially adapted to cut-

[5] Am. Jour. Sci., xlviii, pp. 219–226, Sept., 1894.

[6] Proc. Roy. Soc., lv, (1894), pp. 108–113.

ting the fragile crystals of artificial compounds. It is possible to grind and polish a truly plane surface in any desired direction accurate to within ten minutes of arc. The second device is likewise a somewhat elaborate one for securing monochromatic light of any desired wave-length. This apparatus, which is specially adapted to axial angle instruments, goniometers, spectrometers, stauroscopes and microscopes, secures for the whole field even and bright illumination by monochromatic light of any desired wave-length.

Miscellaneous Notes.—Moscs[7] describes a simplified method of obtaining the projection of the crystallographic axes in clinographic projections of crystals.—Luquer[8] gives in concise form, characters for the optical recognition of the common minerals found in building stones. The form is a convenient one for use, but some quite misleading statements are included, such as the differentiation of quartz from nephelene and apatite "by absence of hexagonal crystals." Apatite and orthoclase are both said to have low relief.—George Otis Smith[9] describes two very large scapolites from Eel Lake, six miles from Kingston, Ontario, on which the third order pyramid $(\frac{3P3}{2})$ (131) is developed at both ends of the crystals. The larger crystal exhibits all the known forms of scapolite except the base. Smith in the same paper examines the monster gypsum crystals of the South Wash, Utah, and a prism thought to be one described by Moses[10] as a new form (450), is found to be the known form (340).—Penfield and Kreider[11] show that hydrofranklinite and chalcophanite are identical. Hydrofranklinite is not isometric as supposed by Roepper, but rhombohedral, the combination shown in the crystals being rhombohedron and base.

Penfield[12] has found a crystal of octahedrite among brookites from Magnet Cove, Ark. Penfieldite[13] is described in detail. The mineral has holohedral hexagonal symmetry, distinct basal cleavage, and strong, positive double refraction. A study is made of the cleavage of albite and oligoclase[14] in which it is shown that the oligoclase from Bakersville, N. C., exhibits two varieties; the one twinned polysynthetically accord-

[7] School of Mines Quarterly, xv, pp. 214–218.
[8] Ibidem, pp. 285–336.
[9] Johns Hopkins Univ. Circulars, No. 112, May, 1894.
[10] School of Mines Quaterly, xiv, p. 325; Science, xxi, p. 230.
[11] Am. Jour. Sci., xlviii, pp. 141–143. Aug,, 1894.
[12] Am. Jour. Sci., xlviii, pp. 113-118, August, 1894.
[13] Penfield, ibidem.
[14] Penfield, ibidem.

ing to the albite law and cleaving well parallel to (010), the other being without twinning or brachy-pinacoidal cleavage, but separating well parallel to $(\bar{1}2\bar{1})$. This suggests that the common cleaving of plagioclase parallel to (010) may be only parting. In an albite from Amelia County, Va., a few parting planes parallel to *m* (110) and *o* $(\bar{1}\bar{1}1)$ were observed. Lehmann's experiment of producing the prismatic parting in normal albite by throwing heated albite fragments into water, was repeated, but no tendency to develop the pyramidal parting under these circumstances was apparent. By holding in a vise and subjecting to a pressure in the direction of the *b* axis, both the partings (110) and $(\bar{1}\bar{1}1)$ were produced in the Amelia albite. Hurlburt[15] describes alunite filling pockets and seams in the ore body at the National Belle mine at Red Mountain, Ouray County, Col. Analysis furnished the following results:

SO_2	Al_2O_3	K_2O	Na_2O	H_2O	Insol.	Total
38.93	39.03	4.26	4.41	13.35	.50	100.48

This furnishes the formula $(K\ Na)\ (Al\ [OH]_2)_3\ (SO_4)_2$, sodium and potassium being present in the proportions 4:7 as in the alunite described by Cross from the Rosita Hills.[16]—Cerussite is described by Pratt[17] from the Judge Mine, Black Hawk, Meager County, Mont., in crystals having the forms *b* (010), *c* (001), *m* (110), *x* (012), *v* (031), *i* (021) and *p* (111). In the same paper are described the zircons from the nepheline syenite of Dungannan and Farady, Ont. These are sometimes so distorted as to resemble the combination of a flat rhombohedron with a second order prism. Other crystals are almost ideally developed and exhibit the forms *p* (111), *a* (100), *m* (110) and *v* (221).—Ingersoll[18] describes hemimorphic wulfenite crystals from the turquoise mines in the Jarilla Mts., N. M. The hemimorphic character is indicated by the general habit and by the occurrence of the second order pyramid $(20\bar{1})$ only in the lower portion of the crystal. The pyramidal hemihedrism is indicated by the occurrence of the pyramid of the third order, π (313).

[15] Am. Jour. Sci., xlviii, pp. 130-131.
[16] Am. Jour. Sci., xlviii, p. 466, 1891.
[17] Ibidem, xlviii, pp. 212-215. Sept., 1894.
[18] Ibidem, pp. 193-195.